

(19)日本国特許庁 (J P)

# (12) 公開特許公報 (A)

(11)特許出願公開番号

特開平7-13809

(43)公開日 平成7年(1995)1月17日

(51)Int.Cl.  
G 0 6 F 11/28

識別記号 庁内整理番号  
3 4 0 C 9290-5B

F I

技術表示箇所

審査請求 有 請求項の数2 FD (全6頁)

(21)出願番号 特願平5-181896

(22)出願日 平成5年(1993)6月28日

(71)出願人 000004237

日本電気株式会社

東京都港区芝五丁目7番1号

(72)発明者 ▲高▼木 三男

東京都港区芝五丁目7番1号 日本電気株式会社内

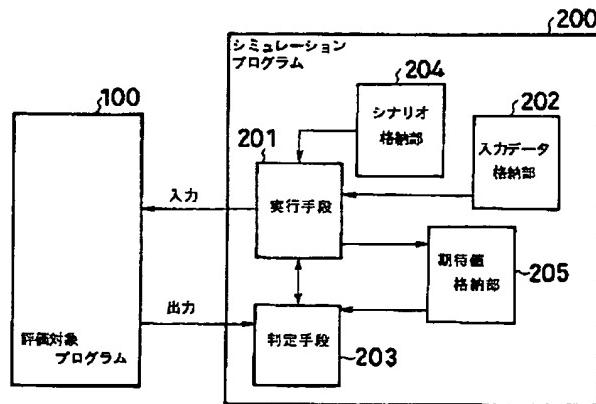
(74)代理人 弁理士 河原 純一

## (54)【発明の名称】 プログラム評価方式

### (57)【要約】

【目的】 固定的でないシミュレーションデータの生成(評価対象プログラムの柔軟な評価)を可能とし、処理結果の自動的な判定を可能とする。

【構成】 シナリオ格納部204は、評価対象プログラム100の評価順序の大要を定めるシナリオを格納する。入力データ格納部202は、各イベントに対応する入力データセットを格納する。期待値格納部205は、各イベントに対応する期待値セットを格納する。実行手段201は、シナリオ格納部204および入力データ格納部202を参照してシミュレーションデータを生成し、そのシミュレーションデータを評価対象プログラム100の入力として与える。判定手段203は、評価対象プログラム100から出力される処理結果と当該処理結果に対応する期待値とを比較し、当該処理結果が当該期待値に適合するか否かを判定する。



BEST AVAILABLE COPY

## 【特許請求の範囲】

【請求項1】 外部プログラムから与えられるデータを入力して処理を実行し処理結果を再び外部プログラムに出力する評価対象プログラムと、  
 評価順序の大要を定めるシナリオを格納するシナリオ格納部と、  
 各イベントに対応する入力データセットを格納する入力データ格納部と、  
 各イベントに対応する期待値セットを格納する期待値格納部と、  
 前記シナリオ格納部および前記入力データ格納部を参照してシミュレーションデータを生成してそのシミュレーションデータを前記評価対象プログラムの入力として与える実行手段と、  
 前記評価対象プログラムから出力される処理結果と前記期待値格納部内の期待値セット中の期待値であって当該処理結果に対応する期待値とを比較して当該処理結果が当該期待値に適合するか否かを判定する判定手段とを有することを特徴とするプログラム評価方式。

【請求項2】 イベント発生時刻とイベント番号との対応情報を各イベントについて時系列的に有するシナリオを格納する前記シナリオ格納部を有することを特徴とする請求項1記載のプログラム評価方式。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】 本発明は、計算機システム上で動作するプログラムの評価を行うプログラム評価方式に関する（評価の対象となるプログラムを「評価対象プログラム」という）。

## 【0002】

【従来の技術】 図4は、従来のプログラム評価方式の一例の構成を示すブロック図である。

【0003】 図4に示す従来のプログラム評価方式は、評価対象プログラム400と、実行手段501、入力データ格納部502および表示手段503を有するシミュレーションプログラム500とを含んで構成されている。

【0004】 シミュレーションプログラム500は、評価対象プログラム400が処理を実行するために必要なデータの入力に関するインターフェースと処理結果の出力に関するインターフェースとを有する外部プログラムを模擬するものである。

【0005】 このように構成された従来のプログラム評価方式は、次のような処理を行っていた。

【0006】 シミュレーションプログラム500内の実行手段501は、入力データ格納部502に格納されている入力データ群（評価対象プログラム400の入力となるデータを時系列的に有する固定的なデータ群）から各入力データを順次に引き出し、各入力データをシミュレーションデータとして評価対象プログラム400に与

える（評価対象プログラム400はこのシミュレーションデータを入力する）。

【0007】 評価対象プログラム400は、そのシミュレーションデータに基づいて処理を実行し、シミュレーションプログラム500に対して処理結果を出力する。

【0008】 シミュレーションプログラム500内の表示手段503は、評価対象プログラム400から出力された処理結果を順次に表示（ハードコピー出力を含む）する。

【0009】 従来のプログラム評価方式では以上のような処理が行われているので、評価対象プログラム400の処理結果が正しかったか誤っていたか等の評価対象プログラムに関する評価は、表示手段503による表示に基づく解析員による解析に任されていた。

## 【0010】

【発明が解決しようとする課題】 上述した従来のプログラム評価方式では、評価対象プログラムが入力するデータ（シミュレーションデータ）は固定的なものであるので、評価対象プログラムの柔軟な評価が困難になるという問題点があった。

【0011】 また、評価対象プログラムが出力する処理結果の評価に関しては、処理結果が表示されるのみであり、処理結果の解析を後の人（解析員）が行う必要があるので、評価対象プログラムを評価するために多くの人手（労力）を要し、評価対象プログラムの誤りについて直ちに対応することができないという問題点があった。

【0012】 本発明の目的は、上述の点に鑑み、シナリオ格納部の導入により固定的でないシミュレーションデータを設定（生成）することが可能となり（評価対象プログラムの柔軟な評価が可能となり）、期待値格納部と判定手段との導入により処理結果の自動的な判定（評価）が可能となるプログラム評価方式を提供することにある。

【0013】 なお、プログラムの評価の自動化等に関する従来技術としては、「特開平2-281339号（データ処理装置の自動評価方式）」や「特開昭62-239241号（会話型データ処理プログラム自動評価方式）」が公表されている。しかし、これらの従来技術は、本発明のように「シミュレーションプログラムを利用した評価対象プログラムの評価」を前提とはしておらず、本発明とは着眼点を異にするものである。

## 【0014】

【課題を解決するための手段】 本発明のプログラム評価方式は、外部プログラムから与えられるデータを入力して処理を実行し処理結果を再び外部プログラムに出力する評価対象プログラムと、評価順序の大要を定めるシナリオを格納するシナリオ格納部と、各イベントに対応する入力データセットを格納する入力データ格納部と、各イベントに対応する期待値セットを格納する期待値格納部と、前記シナリオ格納部および前記入力データ格納部

を参照してシミュレーションデータを生成してそのシミュレーションデータを前記評価対象プログラムの入力として与える実行手段と、前記評価対象プログラムから出力される処理結果と前記期待値格納部内の期待値セット中の期待値であって当該処理結果に対応する期待値とを比較して当該処理結果が当該期待値に適合するか否かを判定する判定手段とを有する。

#### 【0015】

【実施例】次に、本発明について図面を参照して詳細に説明する。

【0016】図1は、本発明のプログラム評価方式の一実施例の構成を示すブロック図である。

【0017】本実施例のプログラム評価方式は、外部プログラム（評価対象プログラム100と同一の計算機システム上で動作するプログラムであってもよいし異なる計算機システム上で動作するプログラムであってもよい）から与えられるデータを入力して処理を実行し処理結果を再び外部プログラムに出力する評価対象プログラム100と、評価対象プログラム100を評価するプログラムであり上述の外部プログラムを模擬するプログラムであるシミュレーションプログラム200とを含んで構成されている。

【0018】シミュレーションプログラム200は、シミュレーションデータを生成してそのシミュレーションデータを評価対象プログラム100の入力として与える実行手段201と、各イベントに対応する入力データセットを格納する入力データ格納部202と、評価対象プログラム100から出力される処理結果と期待値格納部205内の期待値（当該処理結果と対応する期待値）とを比較して当該処理結果が当該期待値に適合するか否かを判定する判定手段203と、評価順序の大要を定めるシナリオを格納するシナリオ格納部204と、各イベントに対応する期待値セットを格納する期待値格納部205とを含んで構成されている。

【0019】図2は、評価対象プログラム100がシミュレーションデータを入力する際の本実施例のプログラム評価方式の動作を説明するためのブロック図である。

【0020】図3は、評価対象プログラム100が処理結果を出力する際（その処理結果をシミュレーションプログラム200が判定する際）の本実施例のプログラム評価方式の動作を説明するためのブロック図である。

【0021】次に、このように構成された本実施例のプログラム評価方式の動作について説明する。

【0022】第1に、図2を参照して、評価対象プログラム100がシミュレーションデータを入力する際の動作について説明する。

【0023】シミュレーションプログラム200内のシナリオ格納部204は、評価対象プログラム100の評価に必要なシナリオ評価順序の大要を定める情報）をあらかじめ格納している。シナリオは、あるイベント（評

価対象プログラム100が一連のデータ群を入力する契機となる事象、すなわち評価対象プログラム100によるデータ入力過程の大要を画する事象）が発生するタイミングを示すイベント発生時刻と、そのイベントを識別する情報であるイベント番号とからなるレコード（イベント発生時刻とイベント番号との対応情報）を、いくつかのイベントに関して時系列的に有している。なお、シナリオの内容は、評価順序の大要を定める情報であれば、このような構成に限られるものではない。

【0024】このようなシナリオはあくまでも評価順序に関する大要、すなわち枠組みを示す情報であるので、1つの評価対象プログラム100に対していくつかの様のシナリオを自由に設定することが可能となる。したがって、本実施例ひいては本発明のプログラム評価方式では、固定的ではなく多様なシミュレーションデータを設定（生成）することができる。

【0025】入力データ格納部202は、シナリオに記述されるイベント番号に対応した入力データの集合（入力データセット）をイベントの数だけ格納している。入力データセットの内容は、入力データが時系列的に揃えられているものであり、また入力データ間の時間間隔（各入力データをシミュレーションデータとして評価対象プログラム100に与える時刻を示すための時間間隔）も記録されている。

【0026】なお、入力データセットの内容は、評価内容等に合わせて調整することが可能である。このことも、固定的ではないシミュレーションデータを設定するために寄与することとなる。

【0027】実行手段201は、評価対象プログラム100の評価を実行する際に、シナリオ格納部204から評価対象プログラム100に対するシナリオ（評価対象プログラム100に対する複数のシナリオがある場合にはその中のいずれか）を読み出す。

【0028】実行手段201は、当該シナリオの内容に基づいて、各イベントを時系列的に順次認識する。すなわち、当該シナリオ内の各レコード（イベント発生時刻とイベント番号との対応情報）を順次読み出す。

【0029】さらに、実行手段201は、読み出したレコード中のイベント番号をキーとして、入力データ格納部202からそのイベント番号に対応した入力データセットを読み出す。

【0030】その後、実行手段201は、イベント発生時に合わせて入力データセット中の最初の入力データをシミュレーションデータとして評価対象プログラム100に与え、入力データセット内に規定されている入力データ間の時間間隔に基づいて順次以降の各入力データをシミュレーションデータとして評価対象プログラム100に与える（このような処理を、当該入力データセット中の最後の入力データを評価対象プログラム100が入力し終わるまで続ける）。

【0031】実行手段201は、当該シナリオにおける最初のイベントから最後のイベントまで、以上のような処理を繰り返す。

【0032】第2に、図3を参照して、評価対象プログラム100が処理結果を出力する際の動作について説明する。

【0033】シミュレーションプログラム200内の期待値格納部205は、あらかじめ、入力データ格納部202内の各入力データセットに対応した各期待値セット（その入力データセット中の各入力データに基づく評価対象プログラム100の各処理結果に対応する各期待値の集合）を格納している。すなわち、各入力データセットに対応した各イベント番号に対応する各期待値セットを格納している。

【0034】判定手段203は、上述の実行手段201の処理に係る「最初の入力データセット」に対する評価対象プログラム100の評価を実行する際に、実行手段201からの指示を受け、最初の入力データセットに対応する期待値セットを期待値格納部205より読み出しておく。

【0035】評価対象プログラム100が最初の入力データセット中の最初の入力データに関する処理を行いその処理結果をシミュレーションプログラム200内の判定手段203に対して出力すると、判定手段203はその処理結果と所定の期待値（先に読み出しておいた期待値セット中の期待値のうちの最初の入力データに対応する期待値）とを比較する。

【0036】判定手段203は、この比較に基づいて、当該処理結果が当該期待値に適合するか否かを判定し、その判定の結果を記録する（この記録は評価対象プログラム100の評価内容としてシミュレーションプログラム200によって出力される）。なお、この判定の態様の一例としては、期待値が「一定の値の範囲を示す情報」であるものとし、処理結果の値が期待値により示される範囲に属するか否かが判定され、属すれば「当該処理結果が当該期待値に適合する」と判定されるという態様が考えられる。

【0037】その後、判定手段203は、最初の入力データセット中の以降の入力データに関する処理に対する処理結果に関する判定を順次行い、最初の入力データセ

ット中の最後の入力データに対応する処理結果に関する判定を行うまで同様の処理を続ける。

【0038】さらに、判定手段203は、最初の入力データセットに対応する処理結果群に関する判定が終了すると、次の入力データセットに対応する期待値セットを期待値格納部205より読み出して上述と同様の処理を繰り返す。そして、このような処理を、最後の入力データセットに対応する処理結果群に関する判定が完了するまで行う。

【0039】

【発明の効果】以上説明したように本発明は、シミュレーションプログラムを利用して評価対象プログラムの評価を行う場合に、評価対象プログラムが入力するデータ（シミュレーションデータ）をシナリオに応じて柔軟かつ多様に生成し、そのシミュレーションデータに基づく処理結果を期待値セット中の期待値と比較することによって評価対象プログラムの評価を実行することにより、評価対象プログラムの評価を自動的かつ高速に行うことができ、短時間で高品質なプログラムの評価を実現することができるという効果を有する。

【図面の簡単な説明】

【図1】本発明のプログラム評価方式の一実施例の構成を示すブロック図である。

【図2】評価対象プログラムがシミュレーションデータを入力する際の図1に示すプログラム評価方式の動作を説明するためのブロック図である。

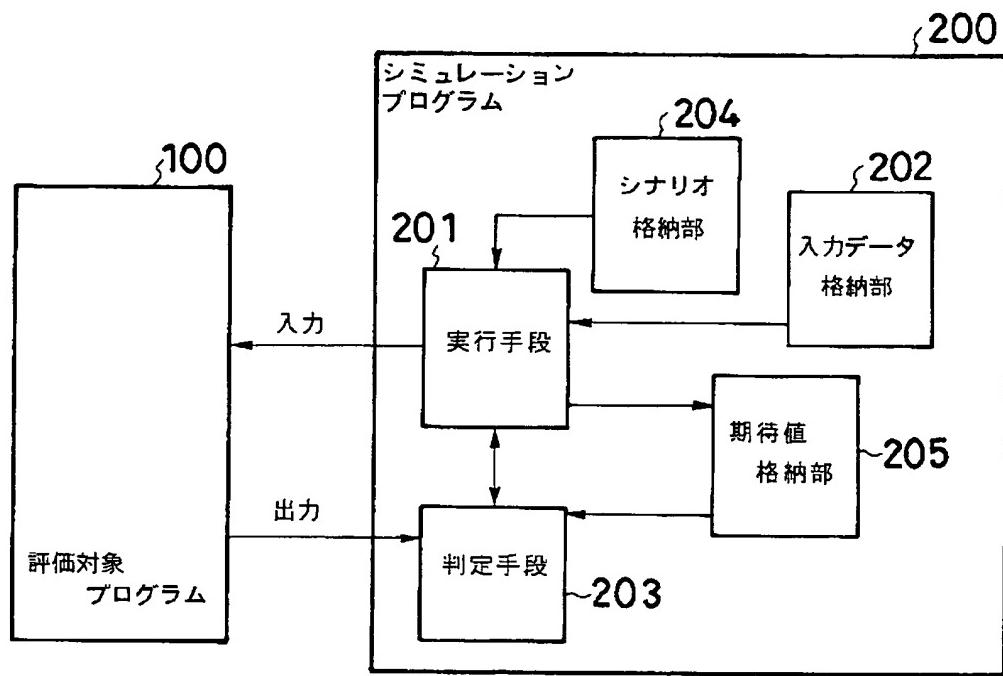
【図3】評価対象プログラムが処理結果を出力する際の図1に示すプログラム評価方式の動作を説明するためのブロック図である。

【図4】従来のプログラム評価方式の一例の構成を示すブロック図である。

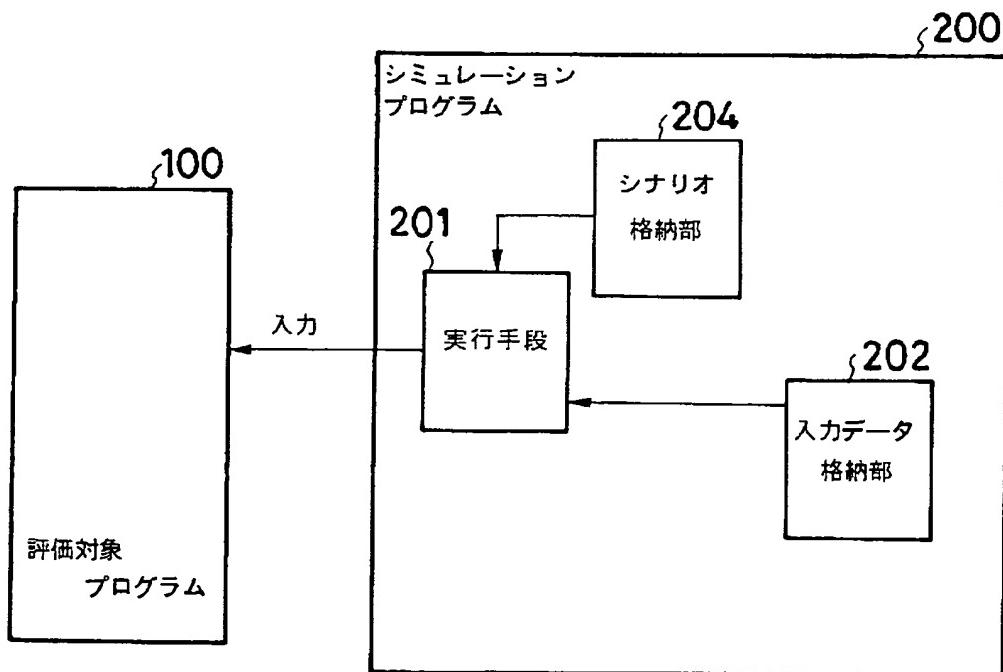
【符号の説明】

- 100 評価対象プログラム
- 200 シミュレーションプログラム
- 201 実行手段
- 202 入力データ格納部
- 203 判定手段
- 204 シナリオ格納部
- 205 期待値格納部

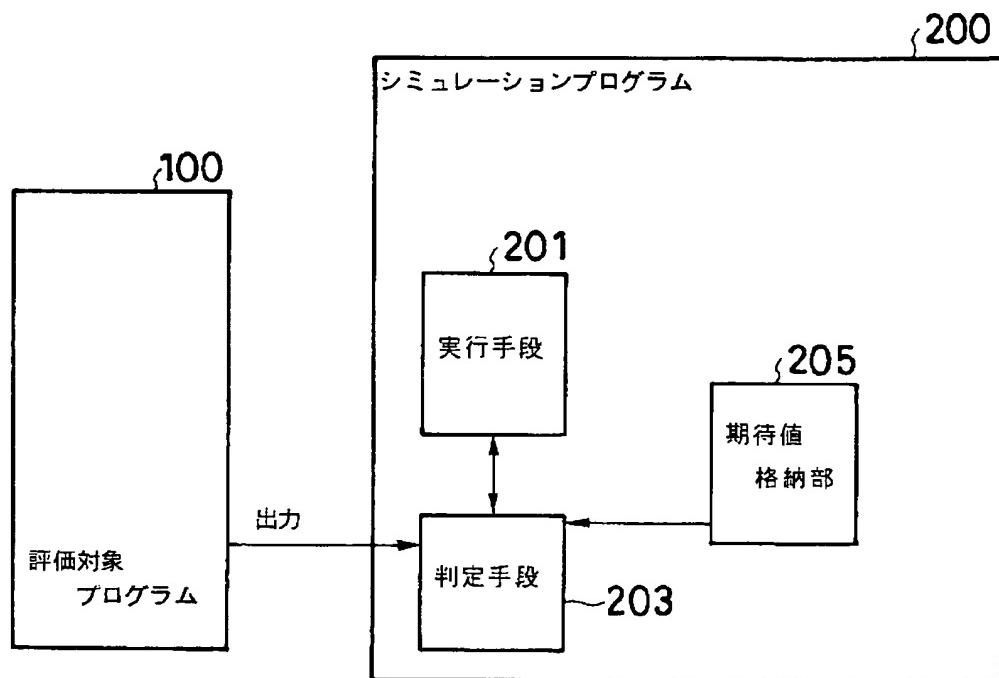
【図1】



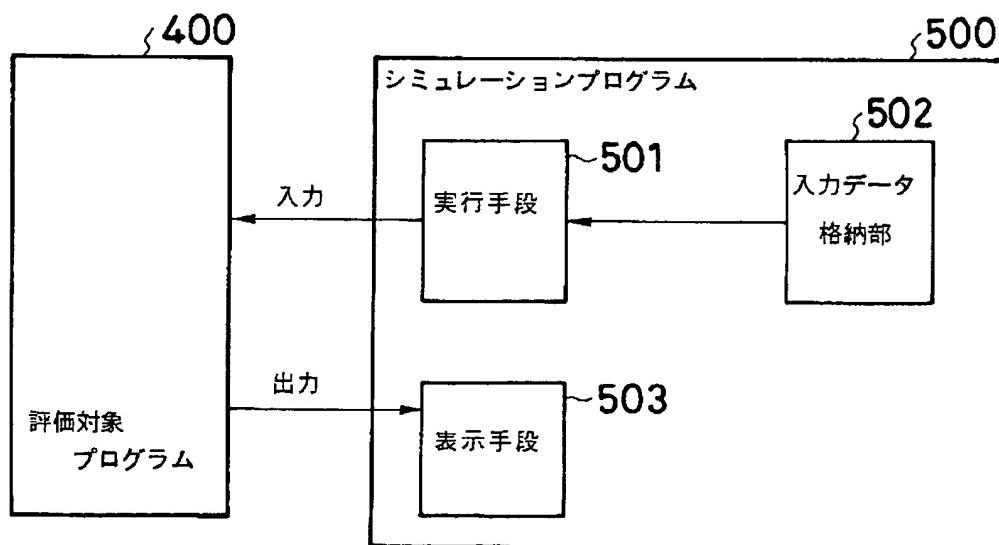
【図2】



【図3】



【図4】



# PATENT ABSTRACTS OF JAPAN

(11)Publication number : **07-013809**  
 (43)Date of publication of application : **17.01.1995**

(51)Int.Cl.

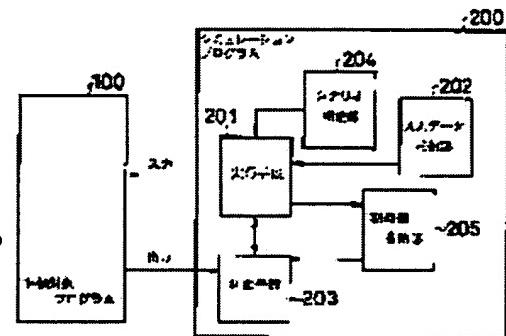
**G06F 11/28**(21)Application number : **05-181896**(71)Applicant : **NEC CORP**(22)Date of filing : **28.06.1993**(72)Inventor : **TAKAGI MITSUO**

## (54) PROGRAM EVALUATION SYSTEM

### (57)Abstract:

**PURPOSE:** To automatically decide a process result by generating simulation data which are not fixed (flexible evaluation of program to be evaluated).

**CONSTITUTION:** A scenario storage part 20 stores a scenario determining the outline of the evaluation order of the program 100 to be evaluated. An input data storage part 202 stores input data sets corresponding to respective events. An expected value storage part 205 stores expected value sets corresponding to the respective events. An execution means 201 generates simulation data by referring to the scenario storage part 204 and input data storage part 202 and supplies the simulation data as an input to the program 100 to be evaluated. A decision means 203 compares a process result outputted from the program 100 to be evaluated with the expected value corresponding to the process result to decide whether or not the corresponding process result matches the expected value.



## LEGAL STATUS

[Date of request for examination] **28.06.1993**

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] **2606085**

[Date of registration] **13.02.1997**

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

**\* NOTICES \***

**JPO and NCIPi are not responsible for any damages caused by the use of this translation.**

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

**CLAIMS**

---

**[Claim(s)]**

[Claim 1] The program for evaluation which inputs the data given from an external program, performs processing, and outputs a processing result to an external program again, The scenario storing section which stores the scenario which defines the outline of evaluation order, and the input data storing section which stores the input data set corresponding to each event, An activation means to generate simulation data with reference to the expected-value storing section which stores the expected-value set corresponding to each event, and said scenario storing section and said input data storing section, and to give the simulation data as an input of said program for evaluation, The program-evaluation method characterized by having a judgment means to be the processing result outputted from said program for evaluation, and the expected value under expected-value set of said expected-value storing circles, and to judge whether the expected value corresponding to the processing result concerned is compared, and the processing result concerned suits the expected value concerned.

[Claim 2] The program-evaluation method according to claim 1 characterized by having said scenario storing section which stores the scenario which has serially the correspondence information on event generating time of day and an event number about each event.

---

[Translation done.]

**\* NOTICES \***

**JPO and NCIPI are not responsible for any damages caused by the use of this translation.**

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

## DETAILED DESCRIPTION

---

### [Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the program-evaluation method by which the program which operates on a computing system is evaluated (the program set as the object of evaluation is called "program for evaluation").

[0002]

[Description of the Prior Art] Drawing 4 is the block diagram showing the configuration of an example of the conventional program-evaluation method.

[0003] The conventional program-evaluation method shown in drawing 4 is constituted including the program 400 for evaluation, and the simulation program 500 which has the activation means 501, the input data storing section 502, and the display means 503.

[0004] The simulation program 500 simulates the external program which has an interface about an entry of data required in order that the program 400 for evaluation may perform processing, and an interface about the output of a processing result.

[0005] Thus, the constituted conventional program-evaluation method was performing the following processings.

[0006] The activation means 501 within the simulation program 500 pulls out each input data one by one from the input data group (fixed data constellation which has serially data used as the input of the program 400 for evaluation) stored in the input data storing section 502, and gives it to the program 400 for evaluation by making each input data into simulation data (the program 400 for evaluation inputs this simulation data).

[0007] The program 400 for evaluation performs processing based on the simulation data, and outputs a processing result to the simulation program 500.

[0008] The display means 503 within the simulation program 500 displays the processing result outputted from the program 400 for evaluation one by one (a hard copy output is included).

[0009] Since the above processings were performed by the conventional program-evaluation method, whether the processing result of the program 400 for evaluation was right or it having mistaken, and the evaluation about the program for evaluation were left to the analysis by the analysis member based on the display by the display means 503.

[0010]

[Problem(s) to be Solved by the Invention] By the conventional program-evaluation method mentioned above, since the data (simulation data) which the program for evaluation inputs were fixed, they had the trouble that flexible evaluation of the program for evaluation became difficult.

[0011] Moreover, since it is [ that a processing result is only displayed and ] and people (analysis member) needed to analyze the processing result behind about evaluation of the processing result which the program for evaluation outputs, in order to evaluate the program for evaluation, many helps (effort) were required, and there was a trouble that it could not respond immediately about the error of the program for evaluation.

[0012] It is for offering the program-evaluation method whose automatic judgment (evaluation) of a processing result the purpose of this invention becomes possible [ setting up the simulation data which is not fixed by installation of the scenario storing section (generation) ] in view of an above-mentioned point (flexible evaluation of the program for evaluation attained), and is attained by installation with the expected-value storing section and a judgment means.

[0013] In addition, as a conventional technique about automation of evaluation of a program etc., "JP,2-

281339,A (automatic evaluation method of a data processor)" and "JP,62-239241,A (conversational-mode data-processing program automatic evaluation method)" are released. However, in these conventional techniques, a premise does not carry out "evaluation of the program for evaluation using a simulation program" like this invention, but this invention differs in a focus.

[0014]

[Means for Solving the Problem] The program for evaluation which the program-evaluation method of this invention inputs the data given from an external program, performs processing, and outputs a processing result to an external program again, The scenario storing section which stores the scenario which defines the outline of evaluation order, and the input data storing section which stores the input data set corresponding to each event, An activation means to generate simulation data with reference to the expected-value storing section which stores the expected-value set corresponding to each event, and said scenario storing section and said input data storing section, and to give the simulation data as an input of said program for evaluation, It has a judgment means to be the processing result outputted from said program for evaluation, and the expected value under expected-value set of said expected-value storing circles, and to judge whether the expected value corresponding to the processing result concerned is compared, and the processing result concerned suits the expected value concerned.

[0015]

[Example] Next, this invention is explained to a detail with reference to a drawing.

[0016] Drawing 1 is the block diagram showing the configuration of one example of the program-evaluation method of this invention.

[0017] The program-evaluation method of this example is constituted including the program 100 for evaluation which inputs the data given from an external program (it may be the program which operates on a computing system which may be the program which operates on the same computing system as the program 100 for evaluation, and is different), performs processing, and outputs a processing result to an external program again, and the simulation program 200 it is the program which evaluates in the program 100 for evaluation, and it is the program simulate an above-mentioned external program.

[0018] An activation means 201 for the simulation program 200 to generate simulation data and to give the simulation data as an input of the program 100 for evaluation, The input data storing section 202 which stores the input data set corresponding to each event, A judgment means 203 to judge whether the processing result outputted from the program 100 for evaluation is compared with the expected value in the expected-value storing section 205 (the processing result concerned and corresponding expected value), and the processing result concerned suits the expected value concerned, It is constituted including the scenario storing section 204 which stores the scenario which defines the outline of evaluation order, and the expected-value storing section 205 which stores the expected-value set corresponding to each event.

[0019] Drawing 2 is a block diagram for explaining actuation of the program-evaluation method of this example at the time of the program 100 for evaluation inputting simulation data.

[0020] Drawing 3 is a block diagram for explaining actuation of the program-evaluation method of this example at the time (when the simulation program 200 judges the processing result) of the program 100 for evaluation outputting a processing result.

[0021] Next, actuation of the program-evaluation method of this example constituted in this way is explained.

[0022] The actuation at the time of 1st the program 100 for evaluation inputting simulation data with reference to drawing 2 is explained.

[0023] The scenario storing section 204 within the simulation program 200 stores beforehand the information which defines the outline of scenario evaluation order required for evaluation of the program 100 for evaluation. A scenario has serially the record (the correspondence information on event generating time of day and an event number) which consists of event generating time of day which shows the timing which a certain event (the event from which the program 100 for evaluation serves as an opportunity which inputs a series of data constellations, i.e., the event which draws the outline of the data input process by the program 100 for evaluation) generates, and an event number which are the information which identifies the event about some events. In addition, if the contents of the scenario are information which defines the outline of evaluation order, they will not be restricted to such a configuration.

[0024] To the last, since such a scenario is the outline about evaluation order, i.e., the information which shows a framework, it becomes possible [ receiving one program 100 for evaluation and setting up the

scenario of the mode of shoes freely ]. Therefore, this example \*\*\*\*\* can set up simulation data that it is not fixed and various by the program-evaluation method of this invention (generation).

[0025] As for the input data storing section 202, only the number of events stores the set (input data set) of the input data corresponding to the event number described by the scenario. The input data is prepared serially and, as for the contents of the input data set, the time interval between input data (time interval to show the time of day given to the program 100 for evaluation by making each input data into simulation data) is also recorded.

[0026] In addition, the contents of the input data set can be adjusted according to the contents of evaluation etc. It will contribute, in order that this may also set up the simulation data which is not fixed.

[0027] In case the activation means 201 performs evaluation of the program 100 for evaluation, it reads the scenario (when there are two or more scenarios which receive the program 100 for evaluation, it is either of them) over the program 100 for evaluation from the scenario storing section 204.

[0028] The activation means 201 carries out sequential recognition of each event serially based on the contents of the scenario concerned. That is, each record within the scenario concerned (correspondence information on event generating time of day and an event number) is read one by one.

[0029] Furthermore, the activation means 201 reads the input data set corresponding to the event number from the input data storing section 202 by using the event number in the read record as a key.

[0030] Then, the activation means 201 is given to the program 100 for evaluation, and is given to the program 100 for evaluation one by one based on the time interval between the input data specified in the input data set by making each subsequent input data into simulation data according to event generating time of day by making the input data of the beginning in an input data set into simulation data (such processing is continued until the program 100 for evaluation finishes inputting the input data of the last in the input data set concerned).

[0031] The activation means 201 repeats the above processings from the first event in the scenario concerned to the last event.

[0032] The actuation at the time of 2nd the program 100 for evaluation outputting a processing result with reference to drawing 3 is explained.

[0033] The expected-value storing section 205 within the simulation program 200 stores each expected-value set (set of each expected value corresponding to each processing result of the program 100 for evaluation based on each input data in the input data set) corresponding to each input data set in the input data storing section 202 beforehand. That is, each expected-value set corresponding to each event number corresponding to each input data set is stored.

[0034] In case the judgment means 203 performs evaluation of the program 100 for evaluation over the "first input data set" concerning processing of the above-mentioned activation means 201, it receives the directions from the activation means 201, and reads the expected-value set corresponding to the first input data set from the expected-value storing section 205.

[0035] If the program 100 for evaluation performs processing about the input data of the beginning in the first input data set and outputs the processing result to the judgment means 203 within the simulation program 200, the judgment means 203 compares the processing result with predetermined expected value (expected value corresponding to the input data of the beginning of the expected value under expected-value set read previously).

[0036] The judgment means 203 judges whether the processing result concerned suits the expected value concerned based on this comparison, and records the result of that judgment (this record is outputted by the simulation program 200 as contents of evaluation of the program 100 for evaluation). In addition, the mode of being judged with "the processing result concerned suiting the expected value concerned" if it is judged whether it belonging to the range in which expected value shall be "the information which shows the range of a fixed value", and the value of a processing result is shown with expected value as an example of the mode of this judgment and it belongs can be considered.

[0037] Then, the judgment means 203 continues the same processing until it performs the judgment about the processing result of the processing about the input data after in the first input data set one by one and performs the judgment about the processing result corresponding to the input data of the last in the first input data set.

[0038] Furthermore, after the judgment about the processing result group corresponding to the first input data

set is completed, the judgment means 203 reads the expected-value set corresponding to the following input data set from the expected-value storing section 205, and repeats the same processing as \*\*\*\*. And such processing is performed until the judgment about the processing result group corresponding to the last input data set is completed.

[0039]

[Effect of the Invention] As explained above, when evaluating the program for evaluation using a simulation program, this invention The data (simulation data) which the program for evaluation inputs are generated flexibly and variously according to a scenario. By performing evaluation of the program for evaluation by comparing the processing result based on the simulation data with the expected value under expected-value set It can carry out to a high speed and has automatic and the effectiveness that evaluation of a quality program is realizable in a short time for evaluation of the program for evaluation.

---

[Translation done.]

**\* NOTICES \***

**JPO and NCIPPI are not responsible for any damages caused by the use of this translation.**

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

**TECHNICAL FIELD**

---

[Industrial Application] This invention relates to the program-evaluation method by which the program which operates on a computing system is evaluated (the program set as the object of evaluation is called "program for evaluation").

---

[Translation done.]

**\* NOTICES \***

**JPO and NCIPI are not responsible for any damages caused by the use of this translation.**

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

**PRIOR ART**

---

[Description of the Prior Art] Drawing 4 is the block diagram showing the configuration of an example of the conventional program-evaluation method.

[0003] The conventional program-evaluation method shown in drawing 4 is constituted including the program 400 for evaluation, and the simulation program 500 which has the activation means 501, the input data storing section 502, and the display means 503.

[0004] The simulation program 500 simulates the external program which has an interface about an entry of data required in order that the program 400 for evaluation may perform processing, and an interface about the output of a processing result.

[0005] Thus, the constituted conventional program-evaluation method was performing the following processings.

[0006] The activation means 501 within the simulation program 500 pulls out each input data one by one from the input data group (fixed data constellation which has serially data used as the input of the program 400 for evaluation) stored in the input data storing section 502, and gives it to the program 400 for evaluation by making each input data into simulation data (the program 400 for evaluation inputs this simulation data).

[0007] The program 400 for evaluation performs processing based on the simulation data, and outputs a processing result to the simulation program 500.

[0008] The display means 503 within the simulation program 500 displays the processing result outputted from the program 400 for evaluation one by one (a hard copy output is included).

[0009] Since the above processings were performed by the conventional program-evaluation method, whether the processing result of the program 400 for evaluation was right or it having mistaken, and the evaluation about the program for evaluation were left to the analysis by the analysis member based on the display by the display means 503.

---

[Translation done.]

**\* NOTICES \***

**JPO and NCIPPI are not responsible for any damages caused by the use of this translation.**

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

**EFFECT OF THE INVENTION**

---

[Effect of the Invention] As explained above, when evaluating the program for evaluation using a simulation program, this invention The data (simulation data) which the program for evaluation inputs are generated flexibly and variously according to a scenario. By performing evaluation of the program for evaluation by comparing the processing result based on the simulation data with the expected value under expected-value set It can carry out to a high speed and has automatic and the effectiveness that evaluation of a quality program is realizable in a short time for evaluation of the program for evaluation.

---

[Translation done.]

**\* NOTICES \***

**JPO and NCIPPI are not responsible for any damages caused by the use of this translation.**

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

**TECHNICAL PROBLEM**

---

[Problem(s) to be Solved by the Invention] By the conventional program-evaluation method mentioned above, since the data (simulation data) which the program for evaluation inputs were fixed, they had the trouble that flexible evaluation of the program for evaluation became difficult.

[0011] Moreover, since it is [ that a processing result is only displayed and ] and people (analysis member) needed to analyze the processing result behind about evaluation of the processing result which the program for evaluation outputs, in order to evaluate the program for evaluation, many helps (effort) were required, and there was a trouble that it could not respond immediately about the error of the program for evaluation.

[0012] It is for offering the program-evaluation method whose automatic judgment (evaluation) of a processing result the purpose of this invention becomes possible [ setting up the simulation data which is not fixed by installation of the scenario storing section (generation) ] in view of an above-mentioned point (flexible evaluation of the program for evaluation attained), and is attained by installation with the expected-value storing section and a judgment means.

[0013] In addition, as a conventional technique about automation of evaluation of a program etc., "JP,2-281339,A (automatic evaluation method of a data processor)" and "JP,62-239241,A (conversational-mode data-processing program automatic evaluation method)" are released. However, in these conventional techniques, a premise does not carry out "evaluation of the program for evaluation using a simulation program" like this invention, but this invention differs in a focus.

---

[Translation done.]

**\* NOTICES \***

**JPO and NCIPI are not responsible for any damages caused by the use of this translation.**

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

**MEANS**

---

[Means for Solving the Problem] The program for evaluation which the program-evaluation method of this invention inputs the data given from an external program, performs processing, and outputs a processing result to an external program again, The scenario storing section which stores the scenario which defines the outline of evaluation order, and the input data storing section which stores the input data set corresponding to each event, An activation means to generate simulation data with reference to the expected-value storing section which stores the expected-value set corresponding to each event, and said scenario storing section and said input data storing section, and to give the simulation data as an input of said program for evaluation, It has a judgment means to be the processing result outputted from said program for evaluation, and the expected value under expected-value set of said expected-value storing circles, and to judge whether the expected value corresponding to the processing result concerned is compared, and the processing result concerned suits the expected value concerned.

---

[Translation done.]

**\* NOTICES \***

**JPO and NCIPi are not responsible for any damages caused by the use of this translation.**

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

**EXAMPLE**

---

[Example] Next, this invention is explained to a detail with reference to a drawing.

[0016] Drawing 1 is the block diagram showing the configuration of one example of the program-evaluation method of this invention.

[0017] The program-evaluation method of this example is constituted including the program 100 for evaluation which inputs the data given from an external program (it may be the program which operates on a computing system which may be the program which operates on the same computing system as the program 100 for evaluation, and is different), performs processing, and outputs a processing result to an external program again, and the simulation program 200 it is the program which evaluates in the program 100 for evaluation, and it is the program simulate an above-mentioned external program.

[0018] An activation means 201 for the simulation program 200 to generate simulation data and to give the simulation data as an input of the program 100 for evaluation, The input data storing section 202 which stores the input data set corresponding to each event, A judgment means 203 to judge whether the processing result outputted from the program 100 for evaluation is compared with the expected value in the expected-value storing section 205 (the processing result concerned and corresponding expected value), and the processing result concerned suits the expected value concerned, It is constituted including the scenario storing section 204 which stores the scenario which defines the outline of evaluation order, and the expected-value storing section 205 which stores the expected-value set corresponding to each event.

[0019] Drawing 2 is a block diagram for explaining actuation of the program-evaluation method of this example at the time of the program 100 for evaluation inputting simulation data.

[0020] Drawing 3 is a block diagram for explaining actuation of the program-evaluation method of this example at the time (when the simulation program 200 judges the processing result) of the program 100 for evaluation outputting a processing result.

[0021] Next, actuation of the program-evaluation method of this example constituted in this way is explained.

[0022] The actuation at the time of 1st the program 100 for evaluation inputting simulation data with reference to drawing 2 is explained.

[0023] The scenario storing section 204 within the simulation program 200 stores beforehand the information which defines the outline of scenario evaluation order required for evaluation of the program 100 for evaluation. A scenario has serially the record (the correspondence information on event generating time of day and an event number) which consists of event generating time of day which shows the timing which a certain event (the event from which the program 100 for evaluation serves as an opportunity which inputs a series of data constellations, i.e., the event which draws the outline of the data input process by the program 100 for evaluation) generates, and an event number which are the information which identifies the event about some events. In addition, if the contents of the scenario are information which defines the outline of evaluation order, they will not be restricted to such a configuration.

[0024] To the last, since such a scenario is the outline about evaluation order, i.e., the information which shows a framework, it becomes possible [ receiving one program 100 for evaluation and setting up the scenario of the mode of shoes freely ]. Therefore, this example \*\*\*\*\* can set up simulation data that it is not fixed and various by the program-evaluation method of this invention (generation).

[0025] As for the input data storing section 202, only the number of events stores the set (input data set) of the input data corresponding to the event number described by the scenario. The input data is prepared serially and, as for the contents of the input data set, the time interval between input data (time interval to show the time of day given to the program 100 for evaluation by making each input data into simulation data)

is also recorded.

[0026] In addition, the contents of the input data set can be adjusted according to the contents of evaluation etc. It will contribute, in order that this may also set up the simulation data which is not fixed.

[0027] In case the activation means 201 performs evaluation of the program 100 for evaluation, it reads the scenario (when there are two or more scenarios which receive the program 100 for evaluation, it is either of them) over the program 100 for evaluation from the scenario storing section 204.

[0028] The activation means 201 carries out sequential recognition of each event serially based on the contents of the scenario concerned. That is, each record within the scenario concerned (correspondence information on event generating time of day and an event number) is read one by one.

[0029] Furthermore, the activation means 201 reads the input data set corresponding to the event number from the input data storing section 202 by using the event number in the read record as a key.

[0030] Then, the activation means 201 is given to the program 100 for evaluation, and is given to the program 100 for evaluation one by one based on the time interval between the input data specified in the input data set by making each subsequent input data into simulation data according to event generating time of day by making the input data of the beginning in an input data set into simulation data (such processing is continued until the program 100 for evaluation finishes inputting the input data of the last in the input data set concerned).

[0031] The activation means 201 repeats the above processings from the first event in the scenario concerned to the last event.

[0032] The actuation at the time of 2nd the program 100 for evaluation outputting a processing result with reference to drawing 3 is explained.

[0033] The expected-value storing section 205 within the simulation program 200 stores each expected-value set (set of each expected value corresponding to each processing result of the program 100 for evaluation based on each input data in the input data set) corresponding to each input data set in the input data storing section 202 beforehand. That is, each expected-value set corresponding to each event number corresponding to each input data set is stored.

[0034] In case the judgment means 203 performs evaluation of the program 100 for evaluation over the "first input data set" concerning processing of the above-mentioned activation means 201, it receives the directions from the activation means 201, and reads the expected-value set corresponding to the first input data set from the expected-value storing section 205.

[0035] If the program 100 for evaluation performs processing about the input data of the beginning in the first input data set and outputs the processing result to the judgment means 203 within the simulation program 200, the judgment means 203 compares the processing result with predetermined expected value (expected value corresponding to the input data of the beginning of the expected value under expected-value set read previously).

[0036] The judgment means 203 judges whether the processing result concerned suits the expected value concerned based on this comparison, and records the result of that judgment (this record is outputted by the simulation program 200 as contents of evaluation of the program 100 for evaluation). In addition, the mode of being judged with "the processing result concerned suiting the expected value concerned" if it is judged whether it belonging to the range in which expected value shall be "the information which shows the range of a fixed value", and the value of a processing result is shown with expected value as an example of the mode of this judgment and it belongs can be considered.

[0037] Then, the judgment means 203 continues the same processing until it performs the judgment about the processing result of the processing about the input data after in the first input data set one by one and performs the judgment about the processing result corresponding to the input data of the last in the first input data set.

[0038] Furthermore, after the judgment about the processing result group corresponding to the first input data set is completed, the judgment means 203 reads the expected-value set corresponding to the following input data set from the expected-value storing section 205, and repeats the same processing as \*\*\*\*. And such processing is performed until the judgment about the processing result group corresponding to the last input data set is completed.

[Translation done.]

**THIS PAGE BLANK (USPTO)**

**\* NOTICES \***

**JPO and NCIPI are not responsible for any damages caused by the use of this translation.**

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

**DESCRIPTION OF DRAWINGS**

---

**[Brief Description of the Drawings]**

**[Drawing 1]** It is the block diagram showing the configuration of one example of the program-evaluation method of this invention.

**[Drawing 2]** It is a block diagram for explaining actuation of the program-evaluation method shown in drawing 1 at the time of the program for evaluation inputting simulation data.

**[Drawing 3]** It is a block diagram for explaining actuation of the program-evaluation method shown in drawing 1 at the time of the program for evaluation outputting a processing result.

**[Drawing 4]** It is the block diagram showing the configuration of an example of the conventional program-evaluation method.

**[Description of Notations]**

100 Program for Evaluation

200 Simulation Program

201 Activation Means

202 Input Data Storing Section

203 Judgment Means

204 Scenario Storing Section

205 Expected-Value Storing Section

---

**[Translation done.]**

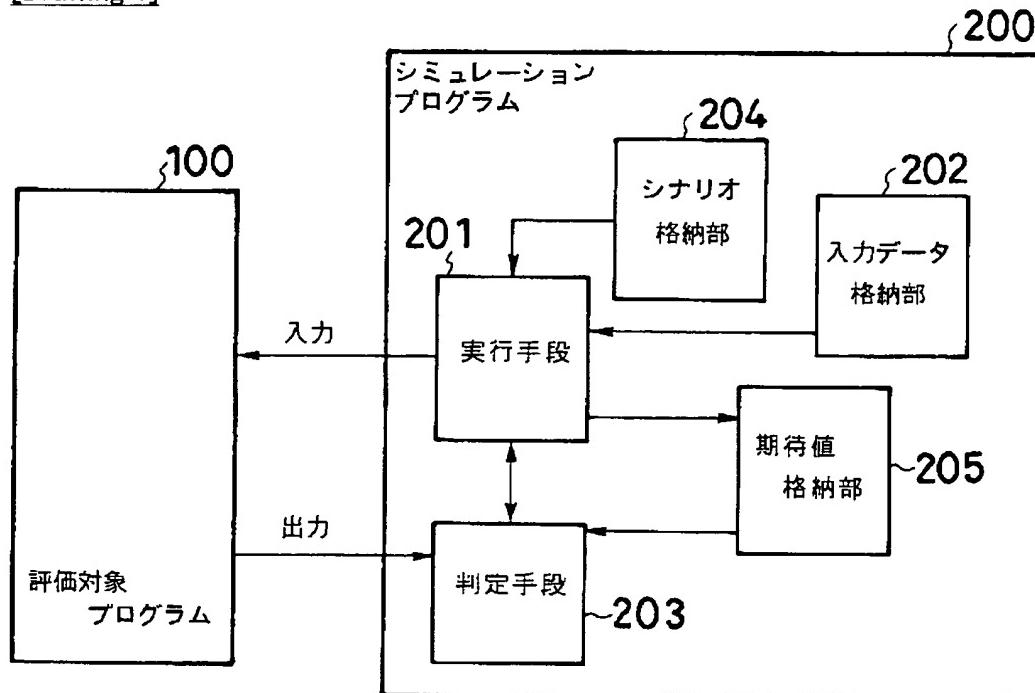
## \* NOTICES \*

JPO and NCIPPI are not responsible for any damages caused by the use of this translation.

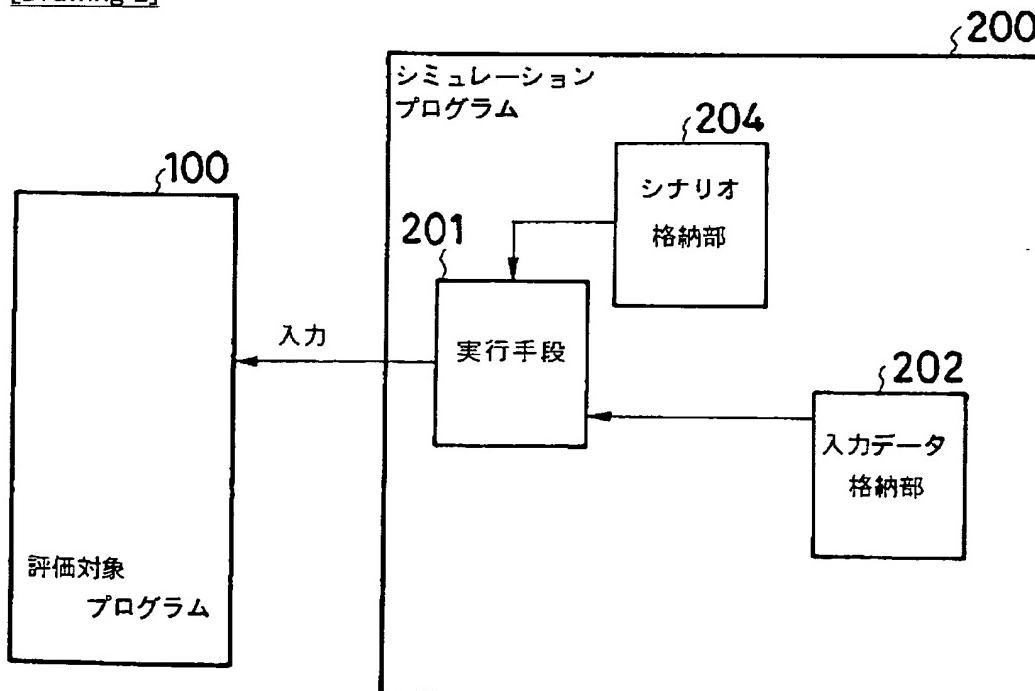
- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

## DRAWINGS

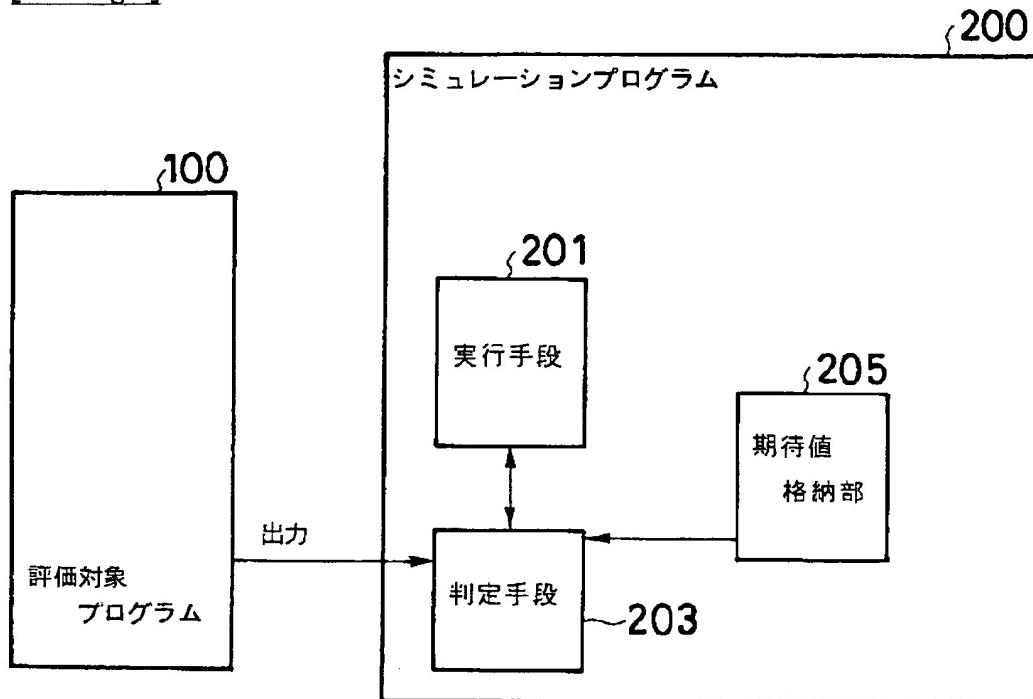
## [Drawing 1]



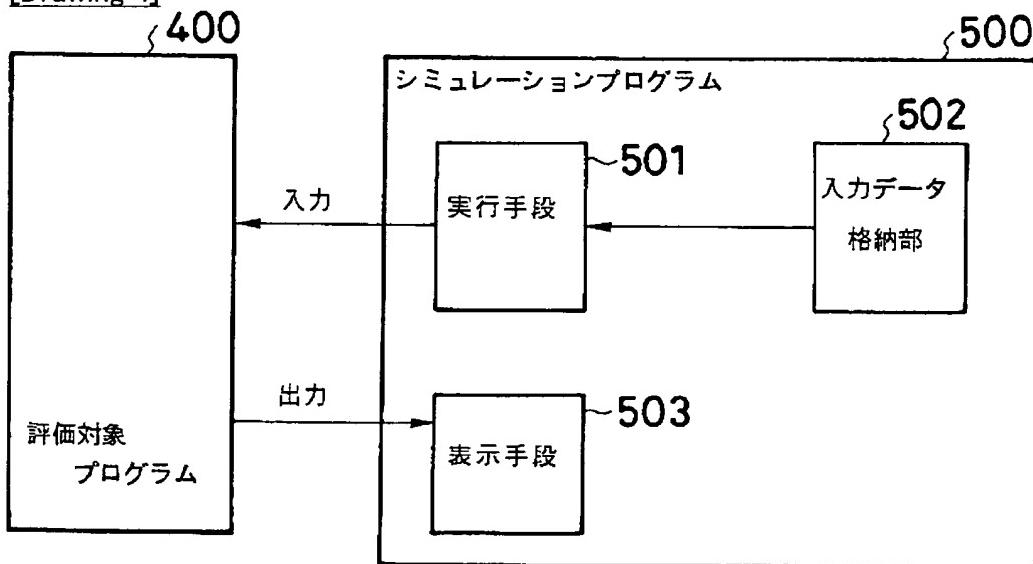
## [Drawing 2]



[Drawing 3]



[Drawing 4]




---

[Translation done.]

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record.**

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- BLACK BORDERS**
- IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- FADED TEXT OR DRAWING**
- BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- SKEWED/SLANTED IMAGES**
- COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- GRAY SCALE DOCUMENTS**
- LINES OR MARKS ON ORIGINAL DOCUMENT**
- REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**